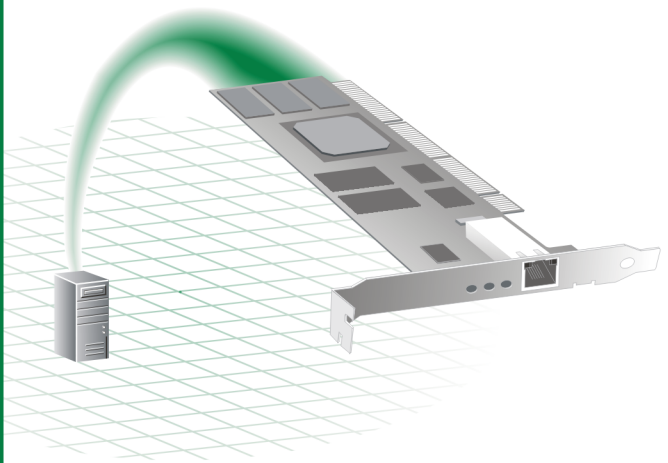
adaptec

INSTALLATION GUIDE

ANA-7711C/F NAC™ ADAPTER

GIGABIT ETHERNET TOE NETWORK ACCELERATOR CARD



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If you have questions about installing or using your Adaptec product, check this document first—you will find answers to most of your questions here. If you need further assistance, use the support options listed below.

Technical Support Identification (TSID) Number

- Before contacting Technical Support, you need your unique 12-digit TSID number. The TSID number identifies your product and support status.
- The TSID number is included on two white, bar-coded labels, like the example below.

IMPORTANT INFORMATION!
AFFIX SERIAL NUMBER STICKER ON THE RETURN PORTION OF THE REGISTRATION CARD.
TSID:100000000000
(1P) PRODUCT P/N: 1000000
(S) PRODUCT S/N: BB00000000000
THIS TSID NUMBER WILL BE REQUIRED WHEN CONTACTING TECHNICAL SUPPORT.
TSID:100000000000
(1P) PRODUCT P/N: 1000000
(S) PRODUCT S/N: BB00000000000

- If you register by mail, affix one copy of the TSID label to the registration card, which may be contained on the CD. Also affix a copy of the TSID label to the CD jacket so that you don't lose it.

Support Options

- Search the Adaptec Support Knowledgebase (ASK) at ask.adaptec.com for articles, troubleshooting tips, and frequently asked questions for your product.
- For support via Email, submit your question to Adaptec's Technical Support Specialists at ask.adaptec.com.

North America

- Visit our Web site at www.adaptec.com.
- For information about Adaptec's support options, call +1 408-957-2550, 24 hours per day, 7 days per week. To speak with a Technical Support Specialist,
  - For **Hardware** products call +1 408-934-7274,
    Monday to Friday, 3:00 A.M. to 5:00 P.M., Pacific Time.
  - For **RAID and Fiber Channel** products call +1 321-207-2000
    Monday to Friday, 3:00 A.M. to 5:00 P.M., Pacific Time.

  To expedite your service, have your computer in front of you.
- To order Adaptec products, including accessories and cables, call +1 408-957-7274. Or, you can order cables online at www.adaptec.com/buy-cables.

Europe

- Visit our Web site at www.adaptec-europe.com.
- **German:** To speak with a Technical Support Specialist, call +49 89 43 66 55 22, Monday to Friday, 9:00 to 17:00, CET. For support via e-mail, submit your question to Adaptec's Technical Support Specialists at ask-de.adaptec.com.
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- **English:** To speak with a Technical Support Specialist, call +49 89 43 66 55 44, Monday to Friday, 9:00 to 17:00, GMT. For support via e-mail, submit your question to Adaptec's Technical Support Specialists at ask.adaptec.com.
- You can order Adaptec cables online at www.adaptec.com/buy-cables.

Japan

- Visit our Web site at www.adaptec.co.jp.
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3. Warranty service is available to the purchaser by delivering the product during the warranty period to an authorized Adaptec service facility or to Adaptec and providing proof of purchase price and date. The purchaser shall bear all shipping, packing and insurance costs and all other costs, excluding labor and parts, necessary to effectuate repair, replacement or refund under this warranty.
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8. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Regulatory Compliance Statements

Federal Communications Commission Radio Frequency Interference Statement

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. However, if this equipment does cause interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.
- Use a shielded and properly grounded I/O cable and power cable to ensure compliance of this unit to the specified limits of the rules.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

Adaptec, Inc. ANA-7711C
ANA-7711F

FC Tested to Comply
With FCC Standards

FOR HOME OR OFFICE USE

European Union Compliance Statement

This Information Technology Equipment has been tested and found to comply with EMC Directive 89/336/EEC, as amended by 92/31/EEC and 93/68/EEC, in accordance with:

- EN55022 (1998) Emissions
- EN55024 (1998) Immunity:
  - EN61000-4-2 (1998) Electrostatic discharge: ±4 kV contact, ±8 kV air
  - EN61000-4-3 (1998) Radiated immunity
  - EN61000-4-4 (1995) Electrical fast transients/burst: ±1 kV AC, ±0.5 kV I/O
  - EN61000-4-5 (1995) Surges ±1 kV differential mode, ±2 kV common mode
  - EN61000-4-6 (1996) Conducted immunity: 3 V
  - EN61000-4-11 (1994) Supply dips and variation: 30% and 100%

In addition, all equipment requiring U.L. listing has been found to comply with EMC Directive 73/23/EEC as amended by 93/68/EEC in accordance with EN60950 with amendments A1, A2, A3, A4, A11.

Australian/New Zealand Compliance Statement

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to the Australian/New Zealand standard AS/NZS 3548 set out by the Spectrum Management Agency.

Canadian Compliance Statement

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Japanese Compliance (Voluntary Control Council Initiative)

This equipment complies to class B Information Technology equipment based on VCCI (Voluntary Control Council for Interface). This equipment is designed for home use but it may causes radio frequency interference problem if used too near to a television or radio. Please handle it correctly per this documentation.

Contents

1 Introduction

Read This First 1-2
ANA-7711C/F NAC Adapter Features 1-2
Kit Contents 1-2
Adapter Illustrations 1-3
System Requirements 1-4
    Hardware Requirements 1-4
    Operating System Requirements 1-4
Using the NAC Installation CD 1-4
About the Documentation 1-5
Overview of the Installation Process 1-6

2 Installing the NAC Adapter

3 Installing the Driver

4 Configuring the NAC Adapter

Setting the Buffer Size 4-2
Enabling and Disabling Autonegotiation 4-2
Enabling or Disabling Flow Control 4-2

1

Introduction

In this Chapter

Read This First 1-2
ANA-7711C/F NAC Adapter Features 1-2
Kit Contents 1-2
Adapter Illustrations 1-3
System Requirements 1-4
Using the NAC Installation CD 1-4
About the Documentation 1-5
Overview of the Installation Process 1-6

Read This First

This chapter is an important guide to the rest of the documentation and provides a summary of the hardware and software installation process. Additional chapters describe how to:

- Install the adapter
- Install the driver

ANA-7711C/F NAC Adapter Features

The ANA-7711C/F NAC adapter features are summarized below:

- Full TCP/IP protocol processing
- PCI 2.2 compliant; compatible with 3.3-V keyed, 32/64-bit, 33/66-MHz PCI/PCI-X slots
- Available in two connector configurations:
  - ANA-7711C—Copper connector
  - ANA-7711F—SC fiber connector
- Supports single processor (UP) and symmetric multiprocessors (SMP)

Kit Contents

Your Adaptec ANA-7711 NAC adapter kit includes:

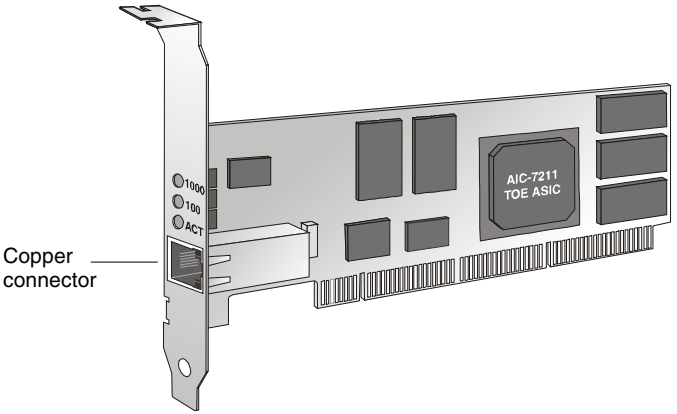
- ANA-7711 copper or fiber NAC adapter, shown on page 1-3.
- *ANA-7711C/F NAC Adapter Getting Started Guide*
- NAC Installation CD containing:
  - Operating system drivers
  - README file
  - This *Installation Guide*

Note: You need a Gigabit Ethernet (GbE) copper (CAT 5 or CAT 6) or SC fiber cable. The cable is *not* included in the kit.

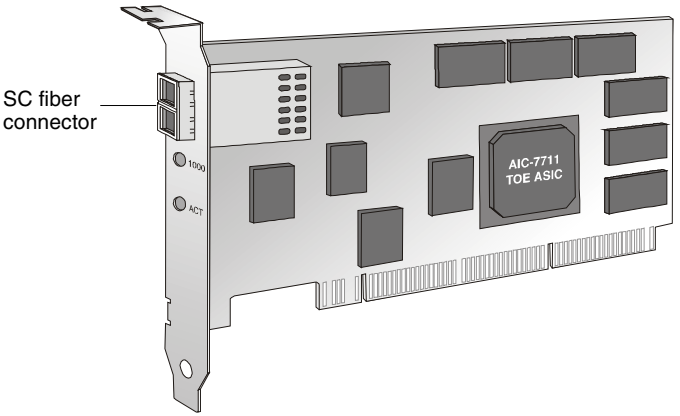
To order cables, visit Adaptec's online store at www.adaptecstore.com or call 1-800-442-7274.

Adapter Illustrations

The ANA-7711C/F NAC adapters are illustrated below. The table that follows describes the LED indicators.



ANA-7711C NAC Adapter



ANA-7711F NAC Adapter

ANA-7711 Model	Label	LED Description
Copper and Fiber	1000	Rate Indicator—When lit (green), indicates a valid GbE (1000 Mbps/sec) connection.
Copper only	100	Rate Indicator—When lit (green), indicates a valid 100 Mbps/sec connection.
Copper and Fiber	ACT	Activity Status—When lit (yellow), indicates an incoming signal or outgoing traffic.

System Requirements

Hardware and operating system requirements are discussed below.

Hardware Requirements

Your computer must meet the following requirements:

- Intel Pentium or equivalent computer
- At least 128 MB of RAM
- An available 3.3-V keyed PCI slot
- CD-ROM drive
- GbE copper (CAT 5 or CAT 6) or SC fiber cable (not included). Visit www.adaptec.com for cables.
- 1000/100 Mbps full-duplex connection to the network.

Operating System Requirements

Your computer must have one of the following compatible operating systems:

Red Hat Linux

- Version 8.0 with kernel version 2.4.18-14

Using the NAC Installation CD

The NAC Installation CD contains the device drivers, README file, and user documentation for your adapter.

- **Documentation**—Includes the README file and the *ANA-7711 C/F NAC Adapter Installation Guide* PDF file. See *About the Documentation* on page 1-5 for details.
- **Drivers**—Provided for Red Hat Linux 8.0, Red Hat Linux 8.0 SMP, and Red Hat Linux 8.0-bigmem for an Intel Pentium computer.

About the Documentation

The NAC Installation CD provides the following documentation files:

- **README**—The README file located in the root directory, contains the latest information about the ANA-7711C/F NAC adapter, important technical information about device compatibility, operating system support, and drivers.

  Visit www.adaptec.com for the latest updates.

  Visit ask.adaptec.com for the latest troubleshooting tips for the adapter or driver.

- **ANA-7711C/F NAC Adapter Getting Started Guide**—Describes how to quickly install your ANA-7711C/F NAC adapter and how to install the driver. The Getting Started Guide also includes information on changing basic configuration settings.

- **ANA-7711C/F NAC Adapter Installation Guide** (This book)—Describes how to install your ANA-7711C/F NAC adapter and how to install the driver. A PDF file of this book is included on the installation CD.

To view and print the PDF files, you will need Adobe's Acrobat Reader or Viewer software installed on your system. Acrobat is available from Adobe as a free download. For details, visit www.adobe.com.

Overview of the Installation Process

The following steps provide an overview of the process of installing and configuring the ANA-7711C/F NAC adapter:

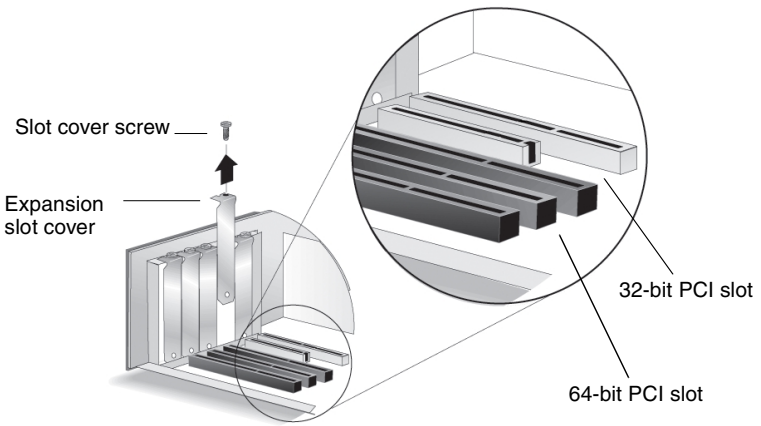
1. Verify that your computer meets the requirements described in *System Requirements* on page 1-4.
2. Gain familiarity with the contents of the NAC Installation CD.
3. Install the ANA-7711C/F NAC adapter as described in Chapter 2.
4. Install the appropriate driver for your operating system as described in Chapter 3.
5. Connect a GbE copper or SC fiber cable and establish network connectivity.

2

Installing the NAC Adapter

To install the adapter in an available 3.3-V keyed PCI slot:

1. Turn off the power to the computer and disconnect the power cord.
2. Before handling the board, discharge any static electricity from your body by touching a grounded metal object such as the exposed metal parts on the back of your computer.
3. Remove the cover from the computer case. If necessary, refer to the instructions in your computer documentation.
4. Locate an unused and unobstructed 3.3-V keyed, 64-bit or 32-bit PCI expansion slot and remove the expansion slot cover. Save the slot cover screw for use in the next step.



5 Insert the adapter in the 3.3-V keyed PCI expansion slot. Press the board firmly into the slot until it clicks into place. Replace the slot cover screw.

Caution: Be sure to use an unused 3.3-V keyed PCI slot.

6 Close the computer cabinet and reattach the power cord.

Next, install the NAC adapter driver for your operating system. See Chapter 3, *Installing the Driver*.

3

Installing the Driver

Now that you have installed the adapter in the computer, you are ready to install the driver. The following installation uses the Red Hat Network Configuration Graphical User Interface (GUI).

Note: To install the driver manually, see the instructions included in the README file on the installation CD.

The following instructions describe how to install the driver on a Red Hat 8.0 UP system or on a Red Hat 8.0 SMP system. Be sure to select the correct driver for your system. Use the driver included in the RedHat8.0 directory for a UP system or the RedHat8.0.SMP directory for a symmetric processor system.

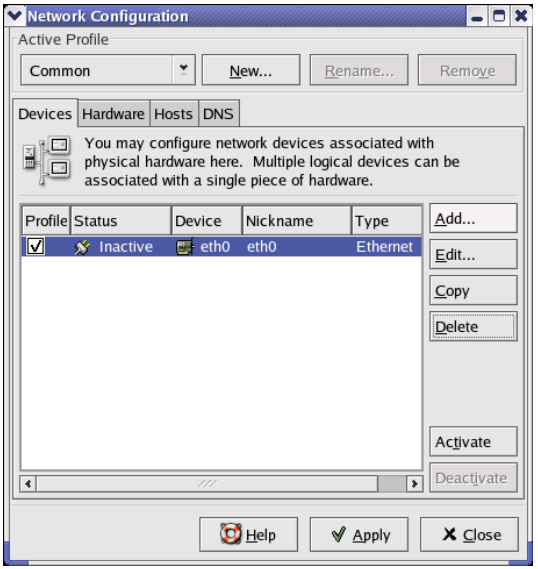
To install the driver:

1. Login to the Red Hat desktop as `root`.
2. Add the ANA-7711 NAC adapter to the list of configurable adapters:
   a. Mount the NAC Installation CD and go to the appropriate driver directory.
   b. Run the install-ana7711 script from a terminal window, enter:

      ```
      ./install-ana7711
      ```
3. Launch Red Hat's Network Configuration GUI. From the **Main Menu**, point to **System Settings** and click **Network**.

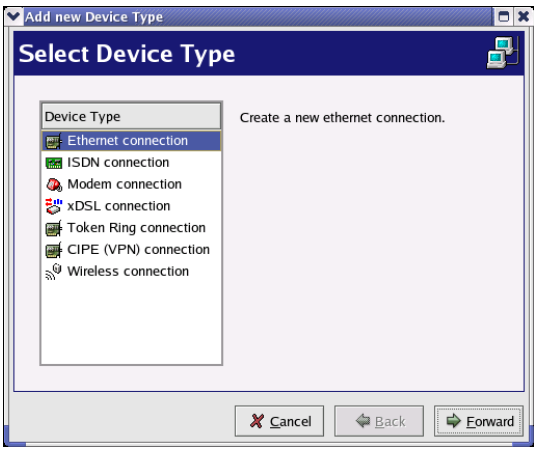
   Alternatively, open a terminal window and enter `neat`.

The Devices tab in the Network Configuration window is displayed. Note the ethernet device numbers listed in the Device column. Later, you will need to select the next unused device number to identify your NAC.



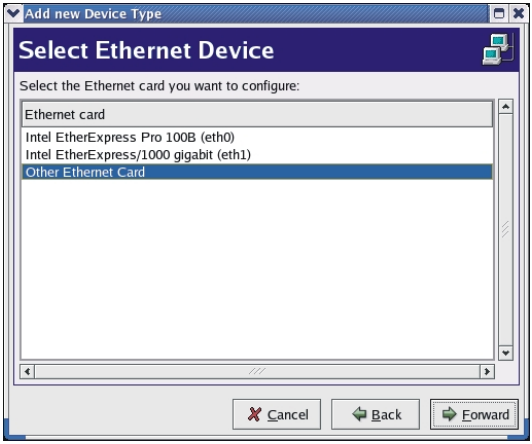
4 Click **Add**.

The Add New Device Type window is displayed.



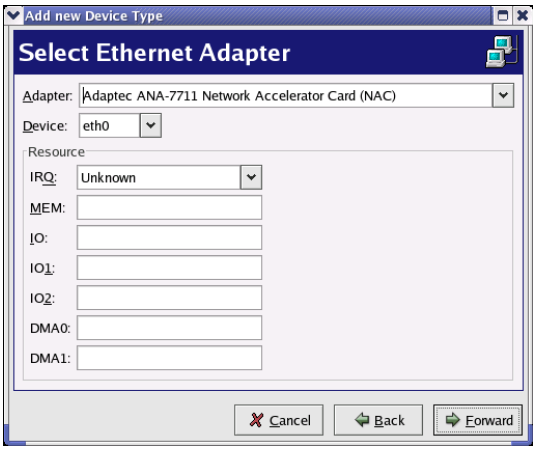
5 Click **Ethernet connection** and click **Forward**.

The Select Ethernet Device window is displayed.



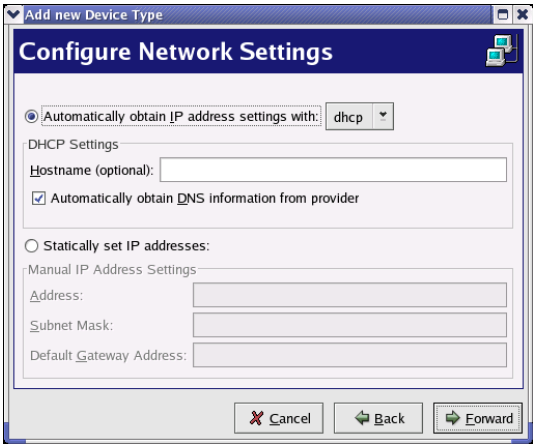
6 Click **Other Ethernet Card** and click **Forward**.

The Select Ethernet Adapter window is displayed.



7 Select **Adaptec ANA-7711 Network Accelerator Card (NAC)** from the Adapter drop down list, and select the next unused **eth** device number for the NAC from the Device drop down list and click **Forward**. You need to select device numbers in sequence.

The Configure Network Settings window is displayed.



8 Click **Automatically obtain IP address settings with:** or **Statically set IP addresses:** as appropriate.

You can automatically obtain IP Address settings using dhcp.

If you choose to enter static addresses, enter the NAC IP Address, Subnet Mask, and Default Gateway Address.

9 Click **Forward** and then click **Apply**.

10 Click **Close** and then save your changes.

11 Reboot for the changes to take effect.

4

Configuring the NAC Adapter

Now that you have installed the driver, you can configure the following settings:

- **buffer_megs**—The amount of memory allocated for temporary packet storage.
- **autoneg**—The autonegotiation port speeds of the NAC and the connected switch.
- **flow**—The flow control or pace of data transmission.

You can change the parameter values in the command line of insmod or you can change the values by appending them to existing lines in /etc/modules.conf.

A sample /etc/modules.conf file is shown below. The parameters are appended to the install ana77drv line.

```
install ana77ptl insmod -f ana77ptl

install adptoe insmod -f adptoe

install ana77drv insmod -f ana77drv
buffer_megs=512 autoneg=enable flow=enable

add below ana77drv ana77ptl adptoe

add below adptoe ana77ptl
```

Setting the Buffer Size

The buffer size identifies the amount of system memory allocated for temporary packet storage. For example, `buffer_megs=512` indicates that 512 MB has been allocated as buffer memory. Increasing this amount improves performance and provides an extra safety margin against packet loss and dropped connections when dealing with large numbers of connections.

To adjust the size of the buffer, change the value of the `buffer_megs` parameter. The default is *16*. The minimum is 1 and the maximum is 512 MB.

Enabling and Disabling Autonegotiation

To adjust the port speed, set the value of the `autoneg` parameter to enable or disable. For example, `autoneg=enable`. The default value is *auto* which enables autonegotiation. Enable is the same as auto.

- **enable**—This enables the autonegotiation of the port speed between the NAC and the switch. Both the NAC and the connected switch must be set to **enable**.
- **disable**—This forces the NAC to operate at 1000 Mbps. Use **disable** only when autonegotiation fails on certain switch models.

Note: You can disable autonegotiation using the ANA-7711F only. This is not supported on the ANA-7711C.

Enabling or Disabling Flow Control

To manage the data flow between the NAC and the switch, set the `flow` parameter to **enable**, **disable**, **tx** (transmit), or **rx** (receive). For example, `flow=enable`. The default value is *auto* which enables flow control.

- **enable**—This enables the NAC to pause data transmission when data overflow occurs during transmit and receive.
- **disable**—This suspends the ability to control data overflow.
- **tx**—This enables flow control during transmit only.
- **rx**—This enables flow control during receive only.

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